

Amendments to the claims.

Please amend the claims as follows:

1. (currently amended) A semiconductor device comprising:
a substrate; and
a plurality of molded plastic stiffener component components secured to the substrate without attachment with an adhesive element, the stiffener component components effective to increase rigidity of the substrate.
2. (original) The device of Claim 1, wherein the substrate is selected from a group consisting of a laminated polymer, a polyimide layer, a bismaleimide triazine (BT) resin, an FR4 laminate, an FR5 laminate, a CEM1 laminate, a CEM3 laminate, and a ceramic metal frame.
3. (original) The device of Claim 1, wherein the substrate has a thickness of less than about 75 microns.
4. (original) The device of Claim 1, wherein the substrate has a thickness of less than about 50 microns.
5. (original) The device of Claim 1, wherein the substrate has a thickness of less than about 35 microns.
6. (currently amended) The device of Claim 1, wherein the stiffener component has stiffeners have a thickness of less than about 100 microns.
7. (currently amended) The device of Claim 1, wherein the stiffener component has components have a thickness of less than about 75 microns.
8. (currently amended) The device of Claim 1, wherein the stiffener component has components have a thickness of less than about 50 microns.

9. (currently amended) The device of Claim 1, wherein the stiffener ~~component comprises components comprise~~ a thermoplastic material.
10. (currently amended) The device of Claim 1, wherein the stiffener ~~component comprises components comprise~~ a thermosetting polymeric material.
11. (currently amended) The device of Claim 1, wherein the thermal coefficient of expansion of the stiffener ~~component components~~ and the substrate correspond such that heating expands both the stiffener ~~component components~~ and the substrate approximately equally.
- 12-15. (canceled)
16. (currently amended) The device of Claim 1, wherein the stiffener ~~component comprises components comprise~~ at least one cross member.
17. (currently amended) The device of Claim 1, wherein the stiffener ~~component is components are~~ in a form selected from the group consisting of a grid, a lattice, a grille, and a web.
18. (canceled)
19. (withdrawn - currently amended) The device of Claim 1, wherein the stiffener ~~component is components are~~ sized to correspond to at least one of a length and a width of the substrate.
20. (canceled)
21. (withdrawn - currently amended) The device of Claim 1, wherein the stiffener ~~component is components are~~ structured as an enclosure for containing an encapsulating material therein.

22. (withdrawn) The device of Claim 1, wherein the substrate comprises index holes.
23. (previously presented) The device of Claim 1, wherein the substrate is in reel form.
24. (currently amended) A semiconductor device comprising:
a substrate comprising a first surface, a second surface, and a periphery; and
a plurality of molded plastic stiffener component components secured to the first surface of the substrate proximate the periphery; the stiffener component components secured to the substrate without attachment with an adhesive element.
25. (withdrawn - currently amended) The device of Claim 24, wherein the stiffener component protrudes components protrude from the first surface of the substrate.
26. (withdrawn - currently amended) The device of Claim 24, wherein the first surface of the substrate comprises a recess and the stiffener component is components are secured to the substrate within the recess.
27. (withdrawn - currently amended) The device of Claim 26, wherein the stiffener component is components are about level with the first surface of the substrate.
28. (currently amended) The device of Claim 24, wherein the stiffener component comprises components comprise at least one cross member.
29. (withdrawn) A semiconductor device comprising:
a substrate comprising a first surface and a second surface;
a first molded plastic stiffener component secured to the first surface of the substrate without attachment with an adhesive element; and
a second molded plastic stiffener component secured to the second surface of the substrate without attachment with an adhesive element.

30. (withdrawn) The device of Claim 29, wherein the first stiffener component and the second stiffener component comprise different configurations.

31. (withdrawn) The device of Claim 29, wherein the first stiffener component and the second stiffener component comprise different dimensions.

32. (currently amended) The device of Claim 29, wherein one of the stiffener ~~component~~ protrudes ~~components~~ protrude from the surface of the substrate, and the other of the stiffener ~~component~~ components are situated within a recess within the substrate and flush with the surface of the substrate.

33. (canceled)

34. (currently amended) A semiconductor assembly comprising:
a substrate having a first surface, a second surface, and a periphery;
a die situated on the first surface of the substrate; and
a plurality of ~~plurality of~~ molded plastic ~~stiffener~~ component ~~components~~ secured to the first surface of the substrate without attachment with an adhesive element.

35. (currently amended) The assembly of Claim 34, wherein the stiffener ~~component~~ is ~~components~~ are situated at the periphery of the substrate.

36. (withdrawn) The assembly of Claim 35, further comprising a second molded plastic stiffener component secured to the second surface of the substrate without attachment with an adhesive element.

37. (previously presented) The assembly of Claim 34, wherein the substrate is selected from a group consisting of a laminated polymer, a polyimide film, a bismaleimide triazine (BT) resin, an FR4 laminate, an FR5 laminate, a CEM1 laminate, a CEM3 laminate, and a ceramic metal frame.

38-43. (cancelled)

44. (currently amended) A method of securing a stiffener to a substrate, comprising ~~the steps of~~:

providing a stiffener material and the substrate, the substrate comprising a first surface, a second surface, and a periphery;

applying ~~the~~ a stiffener material onto the first surface of the ~~a~~ substrate to form a plurality of stiffeners proximate the a periphery of the substrate; and

hardening the stiffener material to form a molded stiffener, wherein the molded stiffener is the plurality of stiffeners are secured to the substrate without attachment with an adhesive element.

45. (currently amended) The method of Claim 44, wherein ~~the step of~~ applying the stiffener material comprises a molding process selected from the group consisting of transfer molding, injection molding, and spray molding.

46. (currently amended) The method of Claim 44, wherein ~~the step of~~ applying the stiffener material comprises applying an encapsulating material to the substrate and molding the encapsulating material into ~~the~~ stiffener said stiffeners.

47. (currently amended) The method of Claim 44, wherein ~~the step of~~ hardening the stiffener material comprises at least one of heating the stiffener material, cooling the stiffener material, curing the stiffener material by means of a catalyst, and curing the stiffener material by exposure to radiation.

48. (currently amended) A method of securing a stiffener to a lead frame assembly, comprising ~~the steps of~~:

providing the lead frame assembly, the lead frame assembly comprising a substrate having a first surface, a second surface, and a periphery, and two or more die situated on the first surface of the substrate;

providing a stiffener material;

molding the a stiffener material onto the first surface of the a substrate to form a plurality of molded-stiffener stiffeners secured to the substrate without attachment with an adhesive element; and

singulating the lead frame assembly having the molded stiffeners situated thereon, to separate the two or more die.

49. (currently amended) The method of Claim 48, further comprising, prior to the singulation step, the step of singulating the lead frame assembly, encapsulating at least a portion of the two or more die situated on the lead frame assembly.

50. (currently amended) The method of Claim 49, wherein:

the stiffener material is molded onto the substrate to provide a boundary at least partially around the die on the substrate,

the encapsulating step said die comprises dispensing an encapsulating material onto the die, and

the molded-stiffener is stiffeners are structured to contain the encapsulating material within said boundary.

51. (withdrawn) A method of forming a semiconductor die package, comprising the steps of: securing a die to a first surface of a substrate;

molding a stiffener material onto the first said surface of the substrate to form a plurality of molded-stiffener stiffeners thereon such that the stiffener is stiffeners are secured to the substrate without attachment with an adhesive element; and

encapsulating the die and the molded-stiffener stiffeners with an encapsulating material to form the semiconductor die package.

52. (withdrawn) The method of Claim 51, wherein the step of encapsulating the die and the stiffeners comprises positioning the substrate with the die and the molded-stiffener stiffeners situated thereon between two mold plates, and removing the package from the mold plates after the encapsulating material has hardened.

53. (withdrawn) A method of forming a semiconductor die package comprising ~~the steps of~~:
mounting a die on a first surface of a lead frame;
molding a stiffener plurality of stiffeners onto the first surface of the lead frame such that
the stiffener is stiffeners are secured to the substrate without attachment with an adhesive
element;
applying an encapsulating material to the die and the stiffeners; and
hardening the encapsulating material to produce the semiconductor die package.

54. (withdrawn) The method of Claim 53, wherein the molded stiffener provides stiffeners
provide at least one of stiffening the lead frame, and increasing rigidity of the lead frame.

55. (currently amended) A semiconductor device, comprising:
a substrate comprising first and second surfaces, and a periphery; and
a plurality of molded thermoplastic component components secured on the substrate
proximate the periphery without attachment with an adhesive element, the plurality of molded
thermoplastic component components structured to stiffen the substrate.

56. (currently amended) A semiconductor device, comprising:
a substrate comprising first and second surfaces, and a periphery;
a plurality of molded thermoplastic component components secured on the substrate
proximate the periphery without attachment with an adhesive element, the plurality of molded
thermoplastic component components structured to stiffen the substrate, and
a die mounted on the first surface of the substrate.

57. (currently amended) A semiconductor device, comprising:
a substrate comprising first and second surfaces, and a periphery;
a plurality of molded thermoset plastic component components secured on the substrate
proximate the periphery without attachment with an adhesive element, the plurality of molded
thermoset plastic component components structured to stiffen the substrate, and
a die mounted on the first surface of the substrate.

58. (currently amended) A semiconductor device, comprising:
a substrate comprising first and second surfaces, and a periphery;
a plurality of molded thermoplastic component components secured to the substrate without attachment with an adhesive element, the plurality of molded thermoset plastic component components situated proximate the periphery and structured to stiffen the substrate, and
an element situated along the periphery of the substrate and structured for engagement with a processing mechanism for transporting the substrate.

59. (previously presented) The device of Claim 58, wherein the engagement element comprises a plurality of index holes proximate the periphery of the substrate.

60. (previously presented) The device of Claim 58, wherein the substrate comprises a lead frame.

61. (currently amended) A semiconductor device, comprising:
a lead frame comprising first and second surfaces, and a periphery;
a plurality of molded thermoplastic component components secured to the lead frame along the periphery to stiffen the lead frame, and
a plurality of index holes proximate the periphery of the substrate and structured for handling the lead frame by a processing mechanism.

62. (currently amended) A method of forming a semiconductor device, comprising the steps of:
providing a substrate comprising first and second surfaces, and a periphery; and
molding a plastic material onto the first surface of the a substrate proximate the a periphery of the substrate to form a plurality of molded plastic stiffeners component being secured to the substrate without attachment with an adhesive element.

63. (currently amended) A method of forming a semiconductor device, comprising the steps of:

providing a substrate comprising first and second surfaces, and a periphery;
applying a plastic material onto the first surface of the a substrate proximate the a periphery of the substrate by a molding process to form a plurality of stiffeners thereon; and
hardening the plastic material on the substrate to form a ~~molded~~ plastic stiffener component that is the stiffeners secured to the substrate without attachment with an adhesive element.

64. (currently amended) The method of Claim 63, wherein the step of applying the stiffening material comprises a transfer molding process.

65. (currently amended) The method of Claim 63, wherein the step of applying the plastic material comprises a injection molding process.

66. (currently amended) The method of Claim 63, wherein the step of applying the plastic material comprises a spray molding process.

67. (previously presented) The method of Claim 63, wherein the plastic material comprises a thermoplastic material.

68. (previously presented) The method of Claim 63, wherein the plastic material comprises a thermosetting polymeric material.

69. (currently amended) The method of Claim 63, wherein the step of hardening the plastic material comprises heating the plastic material.

70. (currently amended) The method of Claim 63, wherein the step of hardening the plastic material comprises cooling the plastic material.

71. (currently amended) The method of Claim 63, wherein the plastic material comprises a catalyst, and the step of hardening the plastic material comprises curing the plastic material.

72. (currently amended) The method of Claim 63, wherein the step of hardening the plastic material comprises curing the plastic material by exposure to radiation.

73. (currently amended) A method of forming a semiconductor device, comprising the steps of:

providing a substrate comprising first and second surfaces, and a periphery;

applying a flowable plastic material onto the first surface of the a substrate proximate the a periphery of the substrate to form a plurality of stiffeners;

hardening the plastic material on the substrate to form a molded plastic stiffener component that is said plurality of stiffeners secured to the substrate without attachment with an adhesive element; and

mounting a die on the first surface of the substrate.

74. (currently amended) A method of forming a semiconductor device, comprising the steps of:

providing a substrate comprising first and second surfaces, and a periphery;

molding a plastic material onto the first surface of the a substrate proximate the a periphery of the substrate to form a plurality of stiffeners;

hardening the plastic material on the substrate to form a molded plastic stiffener component that is said plurality of stiffeners secured to the substrate without attachment with an adhesive element; and

mounting a die on the first surface of the substrate.

75. (currently amended) The method of Claim 74, wherein the step of molding the plastic material comprises a process selected from the group consisting of transfer molding, injection molding, and spray molding.

76. (previously presented) The method of Claim 67, further comprising encapsulating at least a portion of the die.

77-84. (canceled)

85. (currently amended) A semiconductor device comprising: a plurality of molded plastic stiffeners component secured to a substrate without attachment with an adhesive element.

86. (new) A semiconductor device comprising: a plurality of molded plastic stiffeners in the form of a plate secured to a substrate without attachment with an adhesive element.

87. (new) A semiconductor device comprising: a plurality of molded plastic stiffeners in the form of strips secured to a substrate without attachment with an adhesive element.

88. (new) A semiconductor device comprising: a substrate with a plurality of strips of a molded plastic stiffener secured to a surface of said substrate without attachment with an adhesive element.